

## RESPONSE TO OFFICE ACTION

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**REMARKS**

This response is intended as a complete response to the Office Action dated July 13, 2005. In view of the following discussion, the Applicants believe that all claims are in allowable form.

**RESTRICTION ELECTION**

The Applicants hereby affirm the election of claims 1-13 for prosecution. Claims 14-20 have been withdrawn from prosecution.

**CLAIM REJECTIONS****§112 Claims 1-13**

Claims 1-13 stand rejected as being indefinite due to the limitation "an etching gas mixture comprising a fluorine-rich fluorocarbon or hydrofluorocarbon gas, a nitrogen-containing gas, and a hydrogen-rich hydrofluorocarbon gas."

The Examiner contends that the above-recited limitation may refer to from one to three additives. The Applicants hereby clarify for the record that the above-recited limitation refers to three constituents: (1) a fluorine-rich fluorocarbon or hydrofluorocarbon gas; (2) a nitrogen-containing gas; and (3) a hydrogen-rich hydrofluorocarbon gas.

Thus, the Applicants submit that claims 1-13 comply with 35 USC §112 and are patentable thereunder. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

**§102 Claims 1-2, 4-6, 9, and 12**

Claims 1-2, 4-6, 9, and 12 stand rejected as being anticipated by United States Patent No. 6,869,542 issued March 22, 2005, to *Desphande, et al.* (hereinafter *Desphande*). The Applicants respectfully disagree.

Independent claim 1 recites limitations not taught or suggested by *Desphande*. With respect to 35 USC §102, or "anticipation," the Federal Circuit has repeatedly stated that "there is no anticipation unless all of the same elements are found in exactly

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the same situation and united in the same way . . . in a single prior art reference." Perkin-Elmer Corp. v. Computervision Corp., 732 F.2d 888, 894 (Fed. Cir., 1984); Kalman v. Kimberly-Clark Corp., 713 F.2d 760, 771, 218 U.S.P.Q. (BNA) 781, 789 (Fed. Cir. 1983). Here, *Desphande* does not identify each of the claimed elements as arranged in independent claim 1 so as to establish a *prima facie* case of anticipation.

The Examiner, citing *Desphande*, col. 12, lines 23-31, asserts that *Desphande* teaches an etching gas mixture comprising a fluorine-rich fluorocarbon or hydrofluorocarbon gas, a nitrogen-containing gas, and a hydrogen-rich hydrofluorocarbon gas, as recited in claim 1. However, the cited disclosure teaches and suggests only the selection of one of the gases contained in each of a nitrogen gas, a fluorocarbon, an oxidizer, and a noble diluent. (*Desphande*, col. 12, lines 23-31.) There is no teaching or suggestion at the cited location nor anywhere else in *Desphande* that indicates that multiple gases may be selected from any of the categories of gases in the disclosed etching gas mixture. As such, *Desphande* fails to teach or suggest an etching gas mixture comprising a fluorine-rich fluorocarbon or hydrofluorocarbon gas, a nitrogen-containing gas, and a hydrogen-rich hydrofluorocarbon gas, as recited in claim 1.

Thus, claims 1-2, 4-6, 9, and 12 are patentable over *Desphande*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

§103 Claims 3, 7-8, 10-11, and 13**A. Claims 10-11**

Claims 10-11 stand rejected as being unpatentable over *Desphande* in view of United States Patent No. 6,894,245 issued on May 17, 2005 to *Hoffman, et al.* (hereinafter *Hoffman*). The Applicants respectfully disagree.

*Hoffman* is a commonly-assigned, 102(e)-type reference that may not preclude patentability under 35 USC §103. Specifically, *Hoffman* was filed prior to and was first published after the filing date of the present application, making it a 102(e)-type reference. In addition, the inventors of *Hoffman* and the present application were

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under an obligation to assign to the present assignee, Applied Materials, Inc., at the time the invention was made. Thus, *Hoffman* may not preclude patentability of the present application under 35 USC §103. (See, 35 USC §103(c).)

Thus, claims 10-11 are patentable over *Desphande* in view of *Hoffman*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

**B. Claims 7-8**

Claims 7-8 stand rejected as being unpatentable over *Desphande* in view of United States Patent No. 6,828,251 issued on December 7, 2004 to *Su, et al.* (hereinafter *Su*) and further in view of United States Patent No. 6,287,978 issued on September 11, 2001 to *Becker, et al.* (hereinafter *Becker*). The Applicants respectfully disagree.

Independent claim 1 recites limitations not taught or suggested by any combination of *Desphande*, *Su*, and *Becker*. As discussed above, *Desphande* fails to teach or suggest an etching gas mixture comprising a fluorine-rich fluorocarbon or hydrofluorocarbon gas, a nitrogen-containing gas, and a hydrogen-rich hydrofluorocarbon gas, as recited in claim 1. *Su* teaches a method for plasma etching control by adjusting nitrogen to oxygen ratios and carbon to fluorine ratios. *Becker* teaches a method for etching a substrate by maintaining various portions of the etch chamber at elevated temperatures.

However, *Su* and *Becker*, singly or in combination, fails to teach or suggest a modification of the process of *Desphande* in a manner that yields an etching gas mixture comprising a fluorine-rich fluorocarbon or hydrofluorocarbon gas, a nitrogen-containing gas, and a hydrogen-rich hydrofluorocarbon gas, as recited in claim 1. As such, a *prima facie* case of obviousness has not been established as the combination of the cited references fails to yield the limitations recited in claim 1.

Thus, claims 10-11 are patentable over *Desphande* in view of *Su* and further in view of *Becker*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

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**C. Claims 3 and 13**

Claims 3 and 13 stand rejected as being unpatentable over *Desphande* in view of *Su* and further in view of United States Patent No. 6,451,703 issued on September 17, 2002 to *Liu, et al.* (hereinafter *Liu*). The Applicants respectfully disagree.

Independent claim 1 recites limitations not taught or suggested by any combination of *Desphande*, *Su*, and *Liu*. As discussed above, *Desphande* in view of *Su* fails to teach or suggest an etching gas mixture comprising a fluorine-rich fluorocarbon or hydrofluorocarbon gas, a nitrogen-containing gas, and a hydrogen-rich hydrofluorocarbon gas, as recited in claim 1. *Liu* teaches a magnetically enhanced plasma etch process using a heavy fluorocarbon etching gas. However, *Liu* fails to teach or suggest a modification of the process of *Desphande* in view of *Su* in a manner that yields an etching gas mixture comprising a fluorine-rich fluorocarbon or hydrofluorocarbon gas, a nitrogen-containing gas, and a hydrogen-rich hydrofluorocarbon gas, as recited in claim 1. As such, a *prima facie* case of obviousness has not been established as the combination of the cited references fails to yield the limitations recited in claim 1.

Thus, claims 10-11 are patentable over *Desphande* in view of *Su* and further in view of *Liu*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

**CONCLUSION**

Thus, the Applicants submit that all claims now pending are in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issuance are earnestly solicited.

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If, however, the Examiner believes that any unresolved issues still exist, it is requested that the Examiner telephone Mr. Alan Taboada at (732) 935-7100 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

11/11/05  
Date

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